



PROCESSING OF THE FIRST FRENCH SPOKE CAVITY

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CAVITY PROCESSING

Well-known rule:
Cavity preparation is a key issue in order to achieve good performances !!!

The following procedure will be followed for the spoke cavity:

Chemical cleaning

Immediately followed by ultra-pure water **rinsing**

High Pressure Rinsing in class 100 clean room

Assembly (pumping port closed with a cold valve)

Pumping and leak checking (still in the class 100 clean room)

Careful transportation from Saclay to Orsay

Mounting on the insert **in front of a laminar flow**

Pumping and then **opening** of the valve

BCP CHEMICAL ETCHING

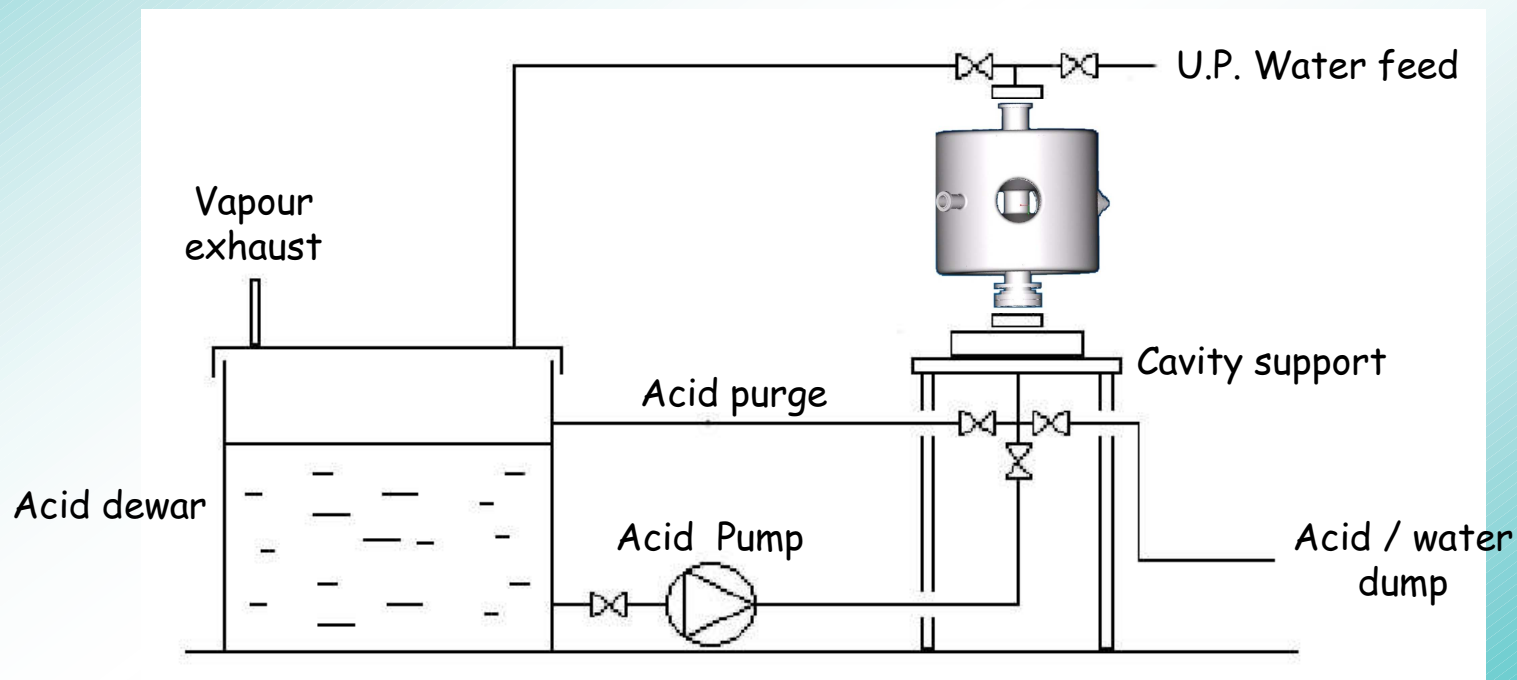
υ **First tests:** Cavity plunged into the acid bath

Mixture of $\text{HF} : \text{HNO}_3 : \text{H}_3\text{PO}_4$ in the volumetric ratio of 1:1:2
150 μm removal for the first chemistry

ω **In the near future:** integrated chemical etching

Circulation of the acid in the cavity using a pump

Immediate rinsing with ultra-pure water

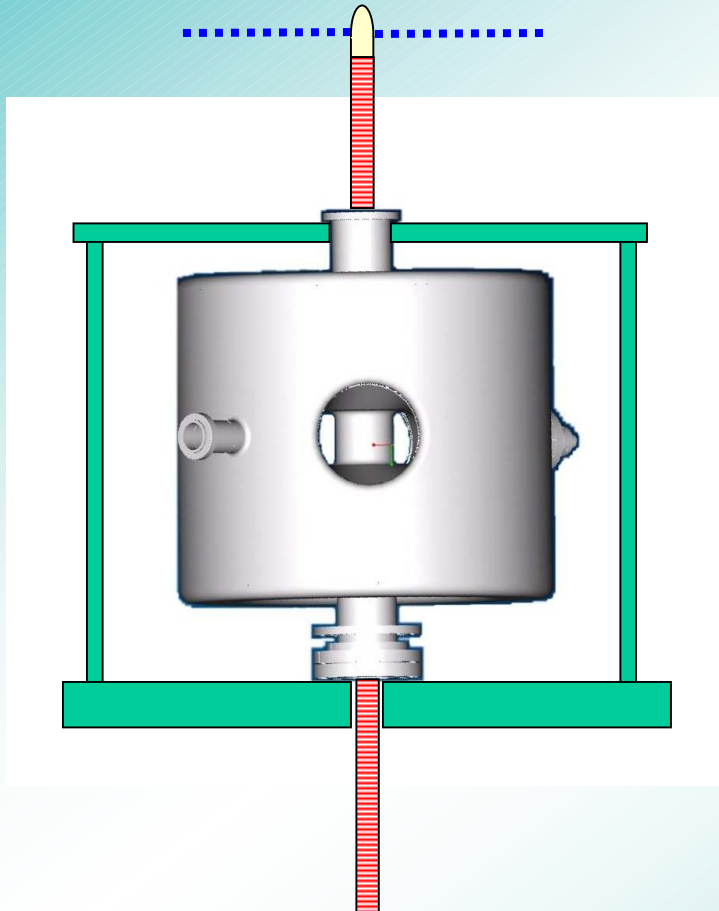


CHEMISTRY: OPEN QUESTION

Any idea of the hydrodynamic of the acid in the spoke cavity during integrated chemistry ?

Are every part of the cavity etched the same way ?

HIG PRESSURE RINSING



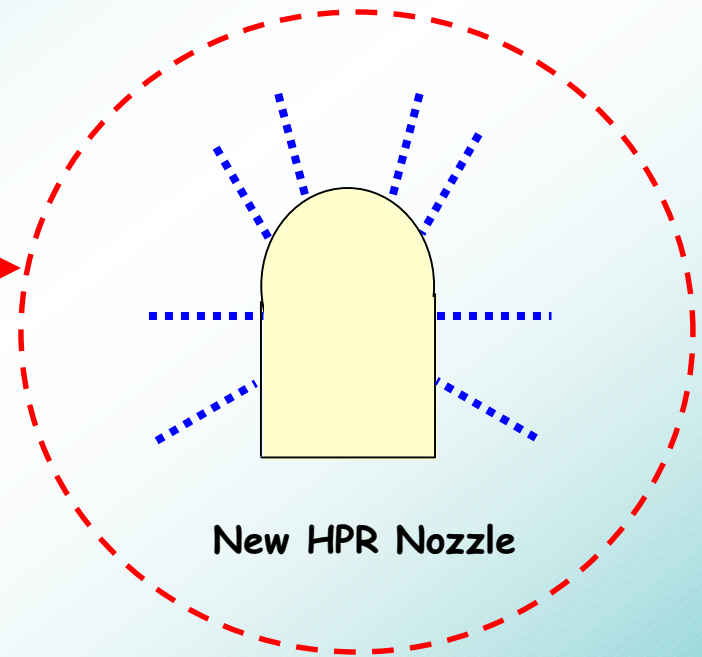
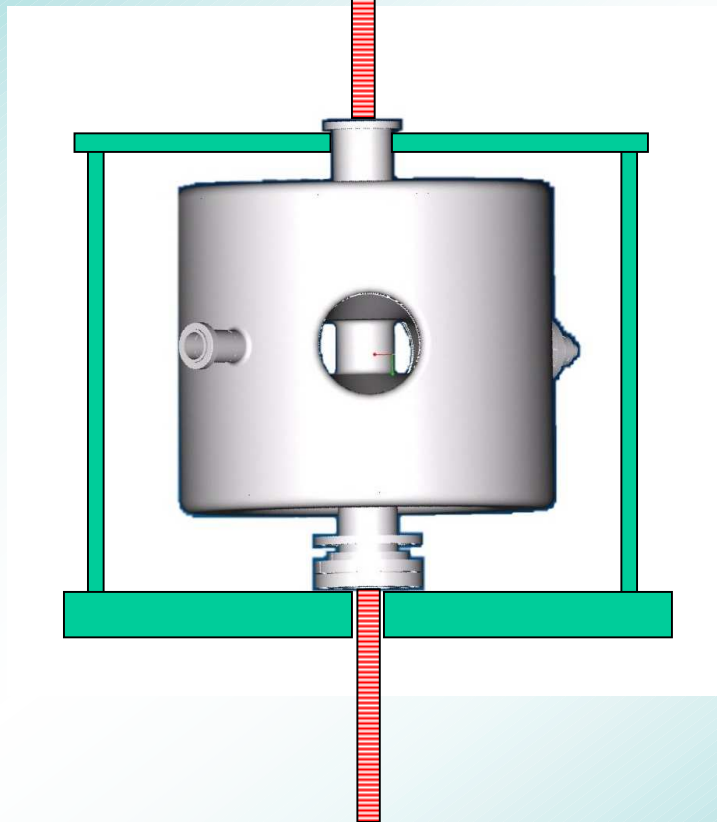
The CEA Saclay HPR:

- 80 Bars
- The cavity is fixed on a rotating support (about 2 turns/second)
- Nozzle: 3 horizontal jets

The CEA Saclay HPR apparatus will be modified to be adapted at the spoke shape.

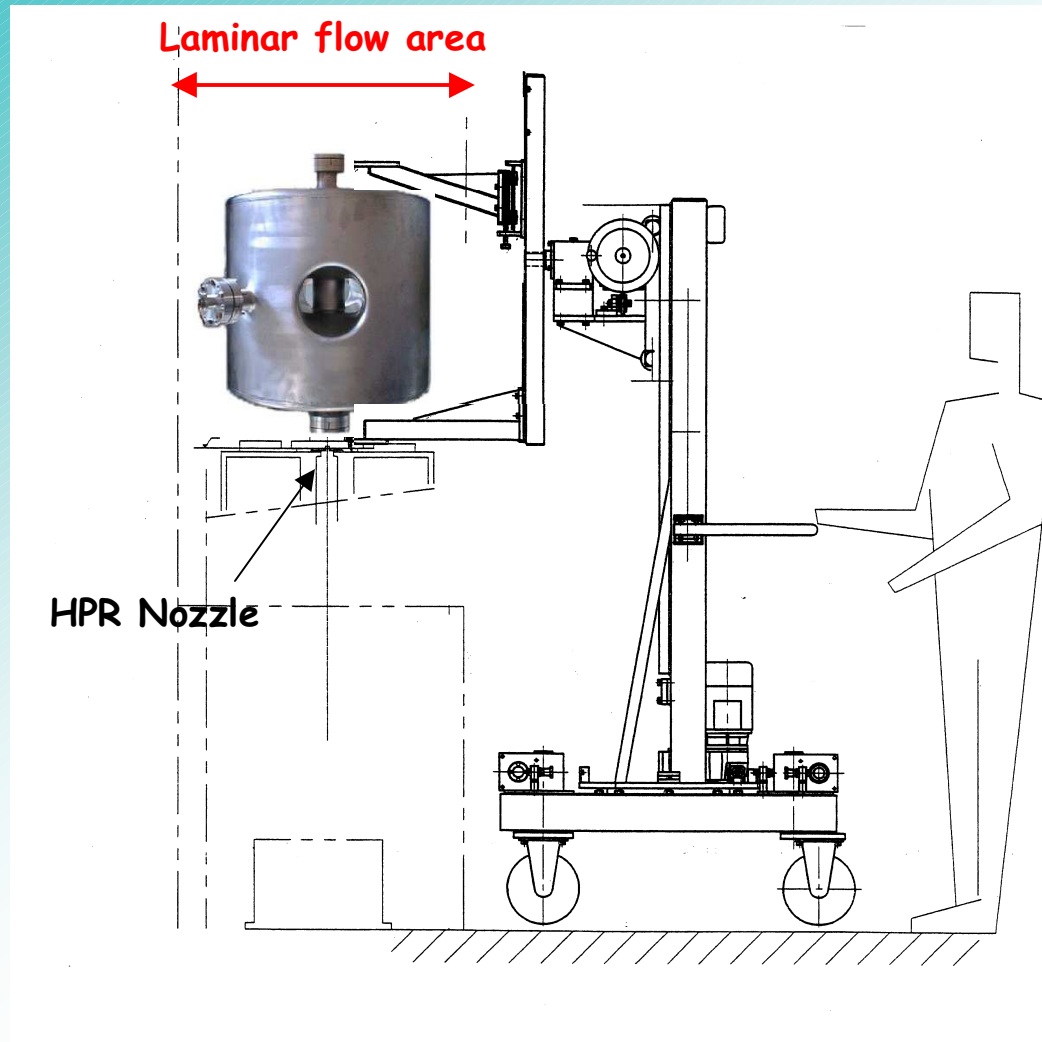
The HPR nozzle will be changed

THE MODIFIED HIGH PRESSURE RINSING APPARATUS



HPR System not optimized !
Water fills the bottom of the cavity

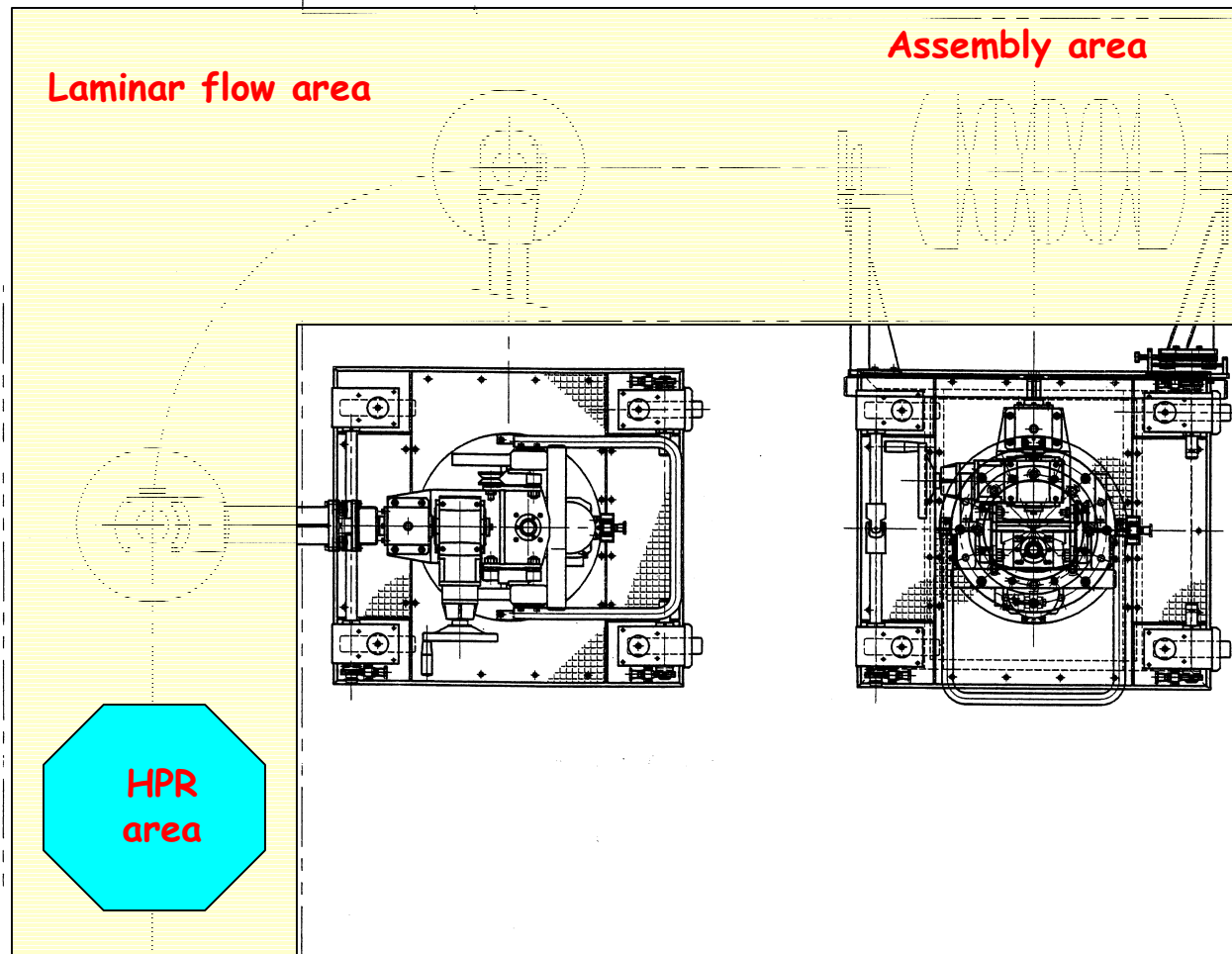
THE HANDLING SYSTEM (1)



Special care has been taken for the handling of heavy cavities (Spoke, Multi-Cell...)

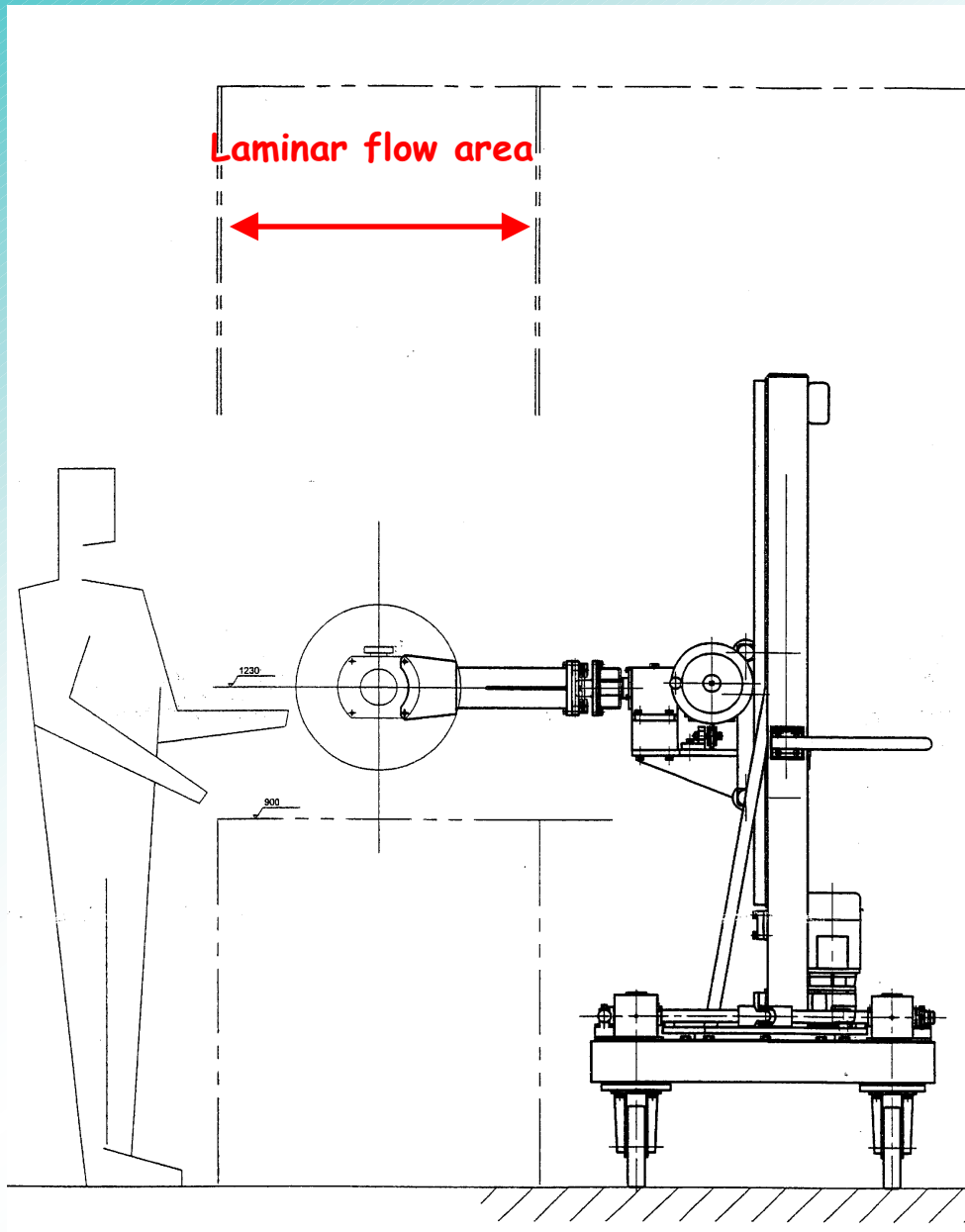
A dedicated trolley was studied and fabricated to easily handle cavities (of different geometry) in the clean room.

THE HANDLING SYSTEM (2)



Cavity movement
in the clean room
from the HPR area
to the assembly
area.

THE HANDLING SYSTEM (3)



The cavity is hold
by the trailer in
the assembly area

FUTURE AND QUESTIONS

Cavity preparation

In-situ baking (reducing the Q_0 slope)

Helium processing

Cavity heat treatment at 800°C (Q_0 disease) ?

Cavity testing:

What diagnostic needed ? T-map, X-rays...